

CLAIMS

1. A process for the preparation of galactose starting from milk or milk serum not subjected to any preliminary and purification treatment and not containing any bactericides or bacteriostats, comprising the following step:

5 i) inoculum of milk or milk serum with non modified micro-organisms able to hydrolyse lactose thus obtaining galactose and glucose, and to consume the so obtained glucose;

ii) fermentation of the solution coming from step i);

10 iii) recovery of the desired galactose solution from the fermentation product coming from step ii).

2. The process according to claim 1, in which said milk or milk serum has a concentration in lactose ranging between 2.5% by weight in respect to the total weight of the milk or milk serum and the saturation concentration.

15 3. The process according to claim 2, in which said milk or milk serum has a concentration in lactose ranging between 3 and 15% by weight in respect to the total weight of the milk or milk serum.

4. The process according to claim 1, in which said non modified micro-organisms in step i) are selected from between lactic ferments and yoghurt ferments.

20 5. The process according to claim 1, in which said non modified micro-organisms of step i) are selected from among bacteria belonging to the family of *Lactobacillaceae*.

6. The process according to claim 5, in which said bacteria belonging to the family of *Lactobacillaceae* are bacteria belonging to bacterial stocks selected from the group consisting of *Streptococcus*, *Lactobacillus* and mixtures thereof.

25 7. The process according to claim 6, in which said bacteria are selected from the group consisting of *Streptococcus Thermophilus*, *Lactobacillus Bulgaricus*, *Lactobacillus Casei* species and mixtures thereof.

30 8. The process according to claim 1, in which said fermentation in step ii) is carried out maintaining a constant pH value at $\text{pH} \leq 7.5$ for a period of time ranging between 16 and 24 hours.

9. The process according to claim 1, in which said fermentation in step ii) is carried out maintaining a constant pH value at $\text{pH} \leq 7.5$ for a period of time ranging

between 16 and 24 hours, and letting then spontaneously decrease pH for a period of time ranging between 5 and 60 hours.

10. The process according to claim 8 or 9, in which said constant pH value ranges between 5.0 and 7.5.

5 11. The process according to claim 1, in which said fermentation in step ii) is carried out at a temperature ranging between 25 and 50°C.

12. The process according to claim 11, in which said fermentation in step ii) is carried out at a temperature ranging between 37 and 45°C.

10 13. The process according to claim 1, in which said milk or milk serum, before being subjected to inoculum in step i), if necessary, is brought to a $\text{pH} \leq 7.5$.

14. The process according to claim 13, in which said milk or milk serum, before being subjected to inoculum in step i), is brought to a pH ranging between 5.0 and 7.5.

15 15. The process according to claims 9 or 13, in which said $\text{pH} \leq 7.5$ value is obtained by adding a base, strong or weak, of inorganic origin.

16. The process according to claim 15, in which said base of inorganic origin is selected from the group consisting of sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, calcium carbonate and ammonia.

20 17. The process according to claim 1, in which the recovery of the galactose solution from the product of fermentation in step ii) is carried out removing the biomass by centrifugation and/or ultrafiltration, thus obtaining a solution that is possibly nanofiltrated and/or concentrated at warm under vacuum, to remove water and obtain a galactose solution of the desired concentration.

25 18. The process according to claim 17, in which after removal of the biomass, the resulting solution is deionised by electrodialysis and subsequent passage on an ion exchange column, and microfiltrated.

19. The process according to claim 1, in which said milk or milk serum, before being subjected to inoculum in step i), and/or at the end of fermentation in step ii), is subjected to pasteurisation.

30 20. Method for the disposal of milk serum derived from dairy industry containing at least 2.5% by weight of lactose in respect to the total weight not subjected to any preliminary and purification treatment and not containing bactericides or

bacteriostats, comprising inoculating serum with non modified micro-organisms able to hydrolyse lactose thus obtaining galactose and glucose and to consume the so obtained glucose, followed by fermentation and recovery of a galactose solution from the fermentation product.